

IN THE CLAIMS:

1. (Currently Amended) A power supply for an auxiliary power unit of a vehicle having a combustion engine ~~which drives an electric generator~~, said power supply comprising:

a fuel cell having a hydrogen input, an oxygen input and an exhaust output;

*(Handwritten mark)*

an electrolyzer ~~for generating hydrogen and oxygen from water, using~~ configured to receive electricity generated by said an electric generator that is driven by ~~when~~ said combustion engine, when said combustion engine is running, and to generate hydrogen and oxygen by electrolysis of water powered by said electricity received from said electric generator;

a hydrogen storage device connected to the electrolyzer for storing hydrogen produced by the electrolyzer, and connected to supply hydrogen to the fuel cell; and

a water supply for supplying water to the electrolyzer; and

~~a pressure pump for adjusting the pressure between the water supply and the electrolyzer.~~

2. (Original) A power supply according to Claim 1, wherein the auxiliary power unit further comprises one of a dc/dc-converter, an ac/dc-converter and an electric control for supplying electric energy to one of electric loads and an electric storage means of the vehicle when the engine is inoperative.

3. (Original) A power supply according to Claim 1, wherein the electrolyzer comprises a reversible fuel cell, which is operable in both an electrolyzer mode and a fuel cell mode.

4. (Original) A power supply according to Claim 1, wherein the water supply comprises a condenser for separating water from a fuel cell exhaust.

5. (Original) A power supply according to Claim 1, wherein the water supply comprises one of a water buffer tank and a vehicle water tank for separating water from a fuel cell exhaust.

6. (Original) A power supply according to Claim 1, wherein the electrolyzer is a high pressure electrolyzer operated at a pressure above 100 bar.

7. (Original) A power supply according to Claim 1, wherein the hydrogen storage tank is a high pressure storage tank operated at a pressure of approximately 400 bar.

8. (Original) A power supply according to Claim 5, further comprising a purification device disposed between the water buffer tank and the electrolyzer.

9. (Original) A power supply according to Claim 1, wherein the electrolyzer further comprises an oxygen storage tank.

10. (Original) A power supply according to Claim 1, further comprising a compressor arranged between said electrolyzer and said hydrogen storage.

11. (Currently Amended) A method for operating a power supply for an auxiliary power unit of a vehicle having a combustion engine that drives an electric generator, which power supply has a fuel cell ~~with a hydrogen input, an oxygen input and an exhaust output; an electrolyzer coupled to receive electric power from said electric generator,~~ for generating hydrogen and oxygen from water; a hydrogen storage device connected to the electrolyzer for storing hydrogen produced by the electrolyzer, and connected to supply hydrogen to the fuel cell; ~~and~~ a water supply for supplying water to the electrolyzer; ~~a pressure pump for adjusting the pressure between the water supply and the electrolyzer,~~ said method comprising:

said electrolyzer using electricity generated by said electric generator to produce hydrogen while the vehicle's engine is operative;

storing produced hydrogen in a ~~high pressure~~ pressurized storage container; and

feeding said hydrogen to said fuel cell for producing electric power while the engine is inoperative.

12. (Currently Amended) A Method method according to Claim 10, wherein the hydrogen is stored in a hydrogen storage tank at a pressure of approximately 400 bar.

13. (Currently Amended) A Method method according to Claim 10, wherein water is fed to the electrolyzer by one of collecting water from the fuel cell exhaust and by collecting water from the combustion engine's exhaust.

14. (Currently Amended) A vehicle comprising:

an electric generator;

a combustion engine which drives said electric generator; and

an auxiliary power unit which includes

[a fuel cell having a hydrogen input, an oxygen input and an exhaust output;]

~~an electrolyzer means coupled to receive for generating hydrogen and oxygen from water, using electricity generated by said electric generator when said combustion engine is running, for using said electricity from said electric generator to generate hydrogen and oxygen from water;~~

a water supply for supplying water to the electrolyzer means;

a hydrogen storage device connected to the electrolyzer for storing hydrogen produced by the electrolyzer means, and connected to supply hydrogen to the fuel cell; and

fuel cell means for supplying electric power to load elements of said vehicle using stored hydrogen produced by said electrolyzer means during operation of said combustion engine.

~~a water supply for supplying water to the electrolyzer; and~~

~~a pressure pump for adjusting the pressure between the water supply and the electrolyzer.~~

15. (New) A power supply for a vehicle, comprising:

an electric generator driven by a combustion engine of said vehicle;

a fuel cell having a hydrogen input, an oxygen input and an exhaust output;

an electrolyzer configured to receive electricity generated by said electric generator when said combustion engine is running, to generate hydrogen and oxygen by electrolysis of water powered by said electricity received from said electric generator;

a hydrogen storage device connected to the electrolyzer for storing hydrogen produced by the electrolyzer, and connected to supply hydrogen to the fuel cell; and

a water supply for supplying water to the electrolyzer.

16. (New) A method for operating an electric system of a vehicle having an electric generator that is driven by a combustion engine of said vehicle, which generator supplies electric power during operation of said combustion engine, said method comprising:

during operation of said combustion engine, using electric power from said electric generator to electrolyze water to produce hydrogen and oxygen;

storing at least said hydrogen that is produced by said electrolyzing of water during operation of said combustion engine;

during periods when said combustion engine is not in operation, supplying electric power to said electric system by feeding said stored hydrogen to a fuel cell to generate said electric power.